

CLAIM AMENDMENTS

1. (Currently Amended) A method, comprising:
 - a) providing:
 - i) a reaction vessel[[],] comprising a top and a bottom;
 - ii) a heat source[[],] contacting said bottom of said reaction vessel;
 - iii) an active cooling means contacting said top of said reaction vessel,
wherein said cooling means is selected from the group consisting of a
water bath and a refrigeration device; and
 - iv) a solution comprising a plurality of reactants;
 - b) introducing said reactants to said reaction vessel to create a solution into said
vessel comprising a bottom solution surface and a top solution surface; and,
 - c) creating at least one convection cell by applying heat to said bottom of said
vessel solution surface with said heat source and cooling said top of said vessel
solution surface with said active cooling means under such conditions that said
reactants form a reaction product a temperature differential of at least 5° C is
established between said bottom solution surface and said top solution surface and
a convection cell is established.
2. (Original) The method of Claim 1, wherein said reactants comprise
 - i) nucleic acid comprising a target and
 - ii) primers substantially homologous to at least a portion of said target.
3. (Original) The method of Claim 2, wherein reactant products are produced.
4. (Original) The method of Claim 3, wherein products comprise amplified nucleic acid.
5. (Original) The method of Claim 1, wherein said reaction vessel comprises at least one material selected from the group consisting of Plexiglas™, glass, plastics, silicones and metal.

6. (Original) The method of Claim 1, wherein said reaction vessel is part of an array.
7. (Currently Amended) The method of Claim 1, wherein a temperature differential of at least 10⁰C is established ~~between said bottom solution surface and said top solution surface and a~~ within said convection cell ~~is established~~.
8. (Original) The method of Claim 1, also providing at least one microdroplet channel wherein said microdroplet channel is in fluid communication with said reaction vessel.
9. (Withdrawn) A system comprising
 - i) a reaction vessel having a top and bottom suitable for establishing a convection cell with a temperature differential of at least 5⁰C between the bottom of said vessel,
 - ii) a heat source positioned at the bottom of said reaction vessel,
 - iii) a cooling source positioned at the top of said reaction vessel and
 - iv) a solution of biomolecules.
10. (Withdrawn) The system of Claim 9, wherein said biomolecules are PCR primers.
11. (Withdrawn) The system of Claim 9, wherein said reaction vessel is comprised of material selected from a group consisting of Plexiglas™, glass, plastics, silicones and metal.
12. (Withdrawn) The system of Claim 9, wherein said reaction vessel is part of an array.
13. (Withdrawn) The system of Claim 9, wherein said reaction vessel is in fluid communication with at least one microdroplet transport channel.

14. (Currently Amended) A method, comprising:

- a) providing:
 - i) a reaction vessel[[],] comprising a top and a bottom;
 - ii) a heat source contacting said bottom of said reaction vessel, and
 - iii) a solution comprising a plurality of reactants;
- b) introducing said reactants to said reaction vessel to create a solution into said vessel comprising a bottom solution surface and a top solution surface; and,
- c) creating at least one convective cell by applying heat to said bottom of said vessel solution surface with said heat source under conditions such that said reactants form a reactant product and cooling said top solution surface by passive cooling under such conditions that a temperature differential of at least 5° C is established between said bottom solution surface and said top solution surface and a convection cell is established.

15. (Original) The method of Claim 14, wherein said reactants comprise i) nucleic acid comprising a target and ii) primers substantially homologous to at least a portion of said target.

16. (Canceled) ~~The method of Claim 15, wherein reactant products are produced.~~

17. (Currently Amended) The method of Claim 14 [[16]], wherein said reactant products comprise amplified nucleic acid.

18. (Original) The method of Claim 14, wherein said reaction vessel comprises material selected from the group consisting of Plexiglas™, glass, plastics, silicones and metal.

19. (Original) The method of Claim 14, wherein said reaction vessel is part of an array.

20. (Currently Amended) The method of Claim 14, wherein a temperature differential of at least 10°C is established ~~between said bottom solution surface and said top solution surface and a within said~~ convection cell is established.

21. (Original) The method of Claim 14 further providing at least one microdroplet channel wherein said microdroplet channel is in fluid communication with said reaction vessel.

22. (Currently Amended) A method, comprising:

- a) providing:
 - i) a reaction vessel configured with ~~an aspect ratio of at least 3.3 width between 1 mm and 3 mm and with a height of less than about 10 times said width,~~
 - ii) a heat source~~[,]~~ contacting said bottom of said reaction vessel;
 - iii) a cooling means ~~contacting said top of said reaction vessel, wherein said cooling means is selected from the group consisting of a water bath and a refrigeration device;~~ and,
 - iv) a solution comprising a plurality of reactants;
- b) introducing said reactants to said reaction vessel to create a solution ~~into said vessel comprising a bottom surface and a top surface;~~ and,
- c) ~~creating at least one convection cell by applying heat to said bottom of said vessel solution surface with said heat source and cooling said top of said vessel solution surface with said cooling means under such conditions that said reactants form a reactant product a temperature differential of at least 5°C is established between said bottom solution surface and said top solution surface and a convection cell is established.~~

23. (Original) The reaction vessel of Claim 22, wherein in cross section the reaction vessel is without corners.

24. (Original) The reaction vessel of Claim 22, wherein in cross section the reaction vessel is with corners.
25. (Original) The method of Claim 22, wherein said reactants comprise i) nucleic acid comprising a target and ii) primers substantially homologous to at least a portion of said target.
26. (Canceled) ~~The method of Claim 25, wherein reactant products are produced.~~
27. (Currently Amended) The method of Claim 22 [[26]], wherein products comprise amplified nucleic acid.
28. (Original) The method of Claim 22, wherein said reaction vessel comprises material selected from the group consisting of PlexiglasTM, glass, plastics, silicones and metal.
29. (Original) The method of Claim 22, wherein said reaction vessel is part of an array.
30. (Currently Amended) The method of Claim 22, wherein a temperature differential of at least 10⁰C is established ~~and a within said convection cell is established.~~
31. (Original) The method of Claim 22 further providing at least one microdroplet channel wherein said microdroplet channel is in fluid communication with said reaction vessel.